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**Translation**

PATENT COOPERATION TREATY

**PCT**

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference CC2 2002050 PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR2003/002414	International filing date (day/month/year) 30 juillet 2003 (30.07.2003)	Priority date (day/month/year) 31 juillet 2002 (31.07.2002)
International Patent Classification (IPC) or national classification and IPC C03B 5/235		
Applicant SAINT-GOBAIN GLASS FRANCE		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.  
  
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 07 octobre 2003 (07.10.2003)	Date of completion of this report 16 November 2004 (16.11.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/002414

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages \_\_\_\_\_ 1-12 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages \_\_\_\_\_ 1-18 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the drawings:  
pages \_\_\_\_\_ 1/1 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	3-13, 18	YES
	Claims	1, 2, 14-17	NO
Inventive step (IS)	Claims	5, 6, 12	YES
	Claims	1-4, 7-11, 13-18	NO
Industrial applicability (IA)	Claims	1-18	YES
	Claims	-	NO

**2. Citations and explanations**

Reference is made to the following documents:

D1: US-A-4 877 449;

D2: EP-A-0 738 692;

D3: EP-A-1 067 099.

PCT Article 33(1) to (3)

*Method claims 1-13*

1. **Claims 1 and 2** do not fulfil the PCT requirement of novelty (PCT Article 33(1) and (2)).

Indeed, document D1 describes (the references between parentheses apply to said document) a method for continuously producing glass in a furnace that includes two tanks (figure 3, 19(a) and 19(b)) each of which includes a burner (22) submerged in the molten material. The glass is optionally used to produce glass wool and it is, therefore, implicit that the composition contains silica and a fluxing agent. Moreover, the raw materials are all loaded into the first tank.

2. Dependent claims 3, 4, 7-11 and 13 do not fulfil the requirement of inventive step set forth in PCT Article 33(1) and (3).

- 2.1 As far as **claims 3 and 10** are concerned, document D1 describes a method in which the raw materials are loaded into the first and second tanks of the furnace (figure 4). The method is used, for example, in the production of glass wool (see column 3, lines 18-19) and, as is well known to a person skilled in the art, such glass wool compositions contain silica, a silica fluxing agent and at least one metal oxide or a fluidifier.

With regard to **claim 3**, document D1 also discloses that, when the charge is fed to both tanks, the composition loaded into the first tank may be different from the composition fed to the second tank (see column 7, lines 39 to 46: charging of "iron ore" to (15a) and "scrap iron" to (15c)). It follows that, depending on the particular circumstances, a person skilled in the art could opt to add mainly a fluidifier (such as, for example, glass wool waste if the method is used for the production of glass wool) to the second tank of the furnace.

As far as **claim 10** is concerned, one of the options that would be obvious to a person skilled in the art is to load the same composition into both tanks. This amounts to disclosing that one part of the silica and the fluxing agent is loaded into the first tank while one part of a metal oxide is loaded into the second tank.

- 2.2 The additional technical feature in **claim 4** is vague and does not enable any differentiation to be made with respect to the prior art. Indeed, in a furnace that includes a plurality of tanks, it is commonplace to heat said tanks to different temperatures.
- 2.3 Document D1 mentions the use of the melting method in the production of glass fibres (see column 3, lines 17-19). Moreover, fibre-glass compositions containing the components disclosed in the present **claim 7** are known to a person skilled in the art (see, for example, document D2, examples 1 to 3).
- 2.4 Document D1 indicates (column 8, lines 29-41) that the method can be used to produce a wide range of products, particularly glass fibres and, as a person skilled in the art is aware, the composition of such products contains large amounts of Na<sub>2</sub>O and B<sub>2</sub>O<sub>3</sub>, which are volatile oxides. A person skilled in the art, seeking to produce frits as per **claim 8** and faced with the problem of reducing volatilisation, would recognise that the method as per **claim 7** could be used, without thereby having to exercise any inventive skill.
- 2.5 With regard to **claim 9**, the use of the claimed metals is commonplace in glass or frit compositions.
- 2.6 As far as **claim 11** is concerned, the combination of two tanks, which are fed with a charge, with a third tank is not described in document D1. However, the addition of a further tank downstream from the tank(s) into which the raw materials are loaded

makes it possible (cf. D1, column 6, lines 36-39) to carry out additional physical or chemical treatments and, in particular, to increase the residence time. It follows that combining the two tanks, which are fed with raw materials, with a third tank is an obvious option that a person skilled in the art would use, depending on the particular circumstances and without an inventive step being involved. Furthermore, the temperatures would be adapted to the composition of the glass without exercising any inventive skill.

- 2.7 Colouring or tile or enamel frits have compositions as per claim 8 or 9. As a result, the objections raised with respect to claims 8 and 9 (§2.4 and 2.5, above) are applicable *mutatis mutandis* to **claim 13**.

*Product claim 14*

3. **Claim 14** does not fulfil the requirement of novelty set forth in PCT Article 33(1) and (2). Indeed, document D3 describes a frit that can be used in tiles (see paragraphs [0001] and [0013]) (with regard to product claims defined in terms of a method, see the PCT Guidelines, 5.26 and Annex 5.26[1], which corresponds to EPO practice).

*Product claims 15-18*

- 4.1 **Claims 15 and 17** do not fulfil the PCT requirement of novelty (PCT Article 33(1) and (2)).

Indeed, document D1 describes (the references between parentheses apply to said document) a furnace for continuously melting glass, which

furnace includes two serially mounted tanks (figure 4, (19a) and (19c), each of which includes a burner (22) submerged in the molten material. Both of said tanks include separate supply means.

- 4.2 Irrespective of the objection in the previous paragraph, **claims 15 and 16** do not fulfil the PCT requirement of novelty (PCT Article 33(1) and (2)).

Indeed, document D1 also describes a furnace that has three tanks (figure 2, (19), (37a) and (37b)) and includes all of the features of claim 16.

5. Dependent **claim 18** does not fulfil the PCT requirement of inventive step (PCT Article 33(1) and (3)), for the following reason:

The addition of a channel, for example for discharging the material towards a forming apparatus, at the furnace outlet is a routine practice that a person skilled in the art would use without exercising any inventive skill.

*Claims 5, 6 and 12*

6. These claims fulfil the PCT requirements of novelty and inventive step (PCT Article 33(1) to (3)).

- 6.1 Indeed, the subject matter of **claim 5** differs from the method of D1 in that the temperature in the first tank is at least 80°C higher than that in the other tanks.

By virtue of this feature, materials such as silica can be efficiently melted in the first tank while

construction materials that are less expensive can be used for the other tanks. It follows that the problem to be solved is that of enabling efficient melting at a competitive cost. This problem is well known but there are no indications in document D1 that would prompt a person skilled in the art to explore the direction taken in the present claim 5.

**Claim 6** is dependent on claim 5 and, as a result, also involves an inventive step.

- 6.2 The subject matter of **claim 12** differs from the method of D1 in that the burner(s) submerged in the third tank has (have) a flame that is sufficiently oxidising for the degree of oxide oxidation to increase between the second and third tank. This feature means that it is possible to adjust the degree of oxidation of certain elements.

D1 describes how to adjust the degree of product oxidation by adding chemical agents (see column 7, lines 16-26 or column 7, lines 39-46). It follows that the problem to be solved in the present application is that of providing alternatives to the method of D1.

D1 suggests the use of a substoichiometric setting for the submerged burner(s) (see column 3, lines 1-7) in order to provide efficient combustion and reduce NOx waste. D1 does not, however, suggest the use of superstoichiometric conditions, nor does it establish any connection between the flame setting and the degree of product oxidation. As a result, the solution proposed in claim 12 is considered to be inventive.



PCT Article 33(4)

7. **Claims 1-18** fulfil the requirements of PCT Article 33(4) because the methods and the products can be used with tiles.